

Translation

PATENT COOPERATION TREATY

PCT

PCT/DE2003/004042



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P801259/WO/1	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2003/004042	International filing date (day/month/year) 09 December 2003 (09.12.2003)	Priority date (day/month/year) 12 December 2002 (12.12.2002)
International Patent Classification (IPC) or national classification and IPC H01M 8/04		
Applicant DAIMLERCHRYSLER AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 08 July 2004 (08.07.2004)	Date of completion of this report 04 May 2005 (04.05.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

T/DE2003/004042

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages _____ 1-6 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____ 1-14 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the drawings:
pages _____ 1/3-3/3 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations

1. US-A-5.645.950 (D1) describes a device for providing air to a fuel cell (12) with a compressor (6) connected upstream of the fuel cell and an expander (16) connected downstream of the fuel cell. The expander and compressor are based on the positive displacement principle. The compressor is based on the volumetric pump principle with internal compression (reaction of the rotational swept volume during a revolution). The expander operates according to the constant volume principle. The compressor and expander are on a shaft. The device is preferably equipped with an inner-shaft rotary piston engine. The compressor and expander are integrated in a housing (see also DE-A-43.18.818, member of the patent family of D1).

Therefore, the device in the present claim 1 differs from the device known from D1 only in that the compressor and the expander of the rotary piston engine are designed as a claw compressor and claw expander, respectively.

Firstly, it is noted that a claw compressor and a claw expander are also parts of rotary piston

engines.

Also, it is noted in WO-A-02.23046 (D2) that a claw compressor is particularly suitable for supplying air to a fuel cell.

Therefore, the use of a claw pole machine as a rotary piston compressor in the device in D1 is known to a person skilled in the art.

Furthermore, DE-A-2.062.007 (D3) and DE-197.09.202 (D4) also indicate that a claw pole machine is used as both a compressor and an expander.

Therefore, it is obvious for a person skilled in the art to use a combination of a claw compressor and a claw expander for the rotary piston engine in D1.

Other suitable claw pole machines can be found in WO-A-02.10593 (D5) and WO-A-00.57062 (D6).

Therefore, the subject matter of claim 1 does not involve an inventive step (PCT Article 33(3)).

2. The features of the dependent claims are either likewise known from the prior art or relate merely to standard measures that a person skilled in the art would choose according to the circumstances in order to solve the problem of interest, without thereby being inventive.
3. Contrary to the requirements of PCT Rule 5.1(a)(ii), the description neither cites documents D1 and D4 nor indicates the prior art disclosed therein.